



SEQUENCE LISTING

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RECEIVED

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<120> NUCLEIC ACIDS AND PROTEINS OF THE MYCOPLASMA PNEUMONIAE
mhp3 GENE AND USES THEREOF

<130> PC10555A

<140> PC10555

<141> 1999-09-29

<160> 42

<170> PatentIn Ver. 2.1

<210> 1

<211> 1692

<212> DNA

<213> Mycoplasma hyopneumoniae

<300>

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<210> 2

<211> 451

<212> PRT

<213> Mycoplasma hyopneumoniae

<400> 2

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Phe Pro Leu Ser Ala Ile Ala Thr Ile Ser Ala Gly Cys Trp Asp Lys
 20 25 30

Glu Thr Thr Lys Glu Glu Lys Ser Ala Asp Asn Gln Asn Lys Gln Ile
 35 40 45

Thr Asp Val Ser Lys Ile Ser Gly Leu Val Asn Glu Arg Lys Ser Glu
 50 55 60

Ile Met Ala Ala Lys Ala Asp Ala Asn Lys His Phe Gly Leu Asn Met
 65 70 75 80

Ala Ile Val Thr Ala Gly Gly Thr Val Asn Asp Asn Ser Phe Asn Gln
 85 90 95

Ser Ser Trp Glu Ala Ile Gln Gln Leu Gly Ala Leu Thr Gly Gly Glu
 100 105 110

Ile Thr Ser Val Asp Ser Ser Thr Ala Glu Leu Glu Gly Lys Tyr Ser
 115 120 125

Ser Leu Ala Asn Thr Asn Lys Asn Val Trp Val Leu Ser Gly Phe Gln
 130 135 140

His Gly Asp Ala Phe Thr Arg Trp Leu Lys Ile Pro Glu Asn Lys Gln
 145 150 155 160

Leu Phe Thr Glu Lys Asn Ile Ile Ile Leu Gly Ile Asp Trp Thr Asp
 165 170 175

Thr	Glu	Asn	Val	Ile	Pro	Thr	Gly	Arg	Tyr	Ile	Asn	Leu	Thr	Tyr	Lys	180	185	190
Thr	Glu	Glu	Ala	Gly	Trp	Leu	Ala	Gly	Tyr	Ala	Asn	Ala	Ser	Phe	Leu	195	200	205
Ala	Lys	Lys	Phe	Pro	Ser	Asp	Pro	Thr	Lys	Arg	Ser	Ala	Ile	Val	Ile	210	215	220
Gly	Gly	Gly	Ile	Ser	Pro	Ala	Val	Thr	Asp	Phe	Ile	Ala	Gly	Tyr	Leu	225	230	235
Ala	Gly	Ile	Lys	Ala	Trp	Asn	Leu	Lys	Asn	Ser	Asp	Lys	Lys	Thr	Lys	245	250	255
Ile	Thr	Thr	Asp	Lys	Ile	Glu	Ile	Asn	Leu	Gly	Phe	Asp	Val	Gln	Asp	260	265	270
Thr	Ser	Thr	Lys	Glu	Arg	Leu	Glu	Gln	Ile	Ala	Ser	Lys	Asp	Lys	Pro	275	280	285
Ser	Thr	Leu	Leu	Ala	Val	Ala	Gly	Pro	Leu	Thr	Glu	Ile	Phe	Ser	Asp	290	295	300
Ile	Ile	Ala	Asn	Gln	Asn	Asp	Arg	Tyr	Leu	Ile	Gly	Val	Asp	Thr	Asp	305	310	315
Gln	Ser	Leu	Val	Tyr	Thr	Lys	Thr	Lys	Asn	Lys	Phe	Phe	Thr	Ser	Ile	325	330	335
Leu	Lys	Asn	Leu	Gly	Tyr	Ser	Val	Phe	Ser	Val	Leu	Ser	Asp	Leu	Tyr	340	345	350
Thr	Lys	Lys	Ser	Asn	Ser	Arg	Asn	Leu	Ala	Gly	Phe	Glu	Phe	Gly	Lys	355	360	365
Lys	Ser	Ala	Thr	Val	Tyr	Leu	Gly	Ile	Lys	Asp	Arg	Phe	Val	Asp	Ile	370	375	380
Ala	Asp	Thr	Ser	Leu	Glu	Gly	Asn	Asp	Lys	Lys	Leu	Ala	Thr	Glu	Ala	385	390	395
Ile	Ser	Glu	Ala	Lys	Lys	Glu	Phe	Glu	Glu	Lys	Thr	Lys	Thr	Ile	Pro	405	410	415
Ala	Glu	Glu	Val	Arg	Lys	Thr	Leu	Glu	Ile	Pro	Glu	Met	Pro	Asp	Lys	420	425	430

Gln Pro Asp Lys Gln Gln Glu Ser Leu Asp Lys Leu Ile Thr Asp Ile
 435 440 445

Asn Lys Asn
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<210> 3
 <211> 1263
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: mhp3
 manipulated for in vitro expression

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 aaagctgatg caaacaacaa ttttgggcta aatatggcaa ttgtaaccgc tgggtggaacg 180
 gtaaatgata attcatttaa ccaatcargt tgggaggcaa ttcaacaact tggcgctctt 240
 actggagggtg agattacttc agtagatagt tcaactgctg aacttgaagg aaaatatagc 300
 tcacttgcta ataccaacaa aaatgtttgg gtactttctg gttttcaaca cggtgatgcg 360
 ttcacaagat ggtaaaaaat ccctgaaaat aagcaattat ttactgaaaa aaatattatc 420
 atactcggaa ttgactggac tgatactgaa aatgtaattc caacaggctc atatattaat 480
 ttaacctata aaactgaaga agccggatgg cttgcaggat atgcgaatgc ttcctttttg 540
 gcaaaaaaat tccaagtga tccaactaaa agatcagcaa ttgttatcgg tgggtgggatt 600
 tcgccagctg taactgattt tatcgctggg tatctagccg gaattaaagc ttggaatcta 660
 aaaaattctg ataaaaaac aaagataaca actgataaaa tcgagataaa tcttggggtt 720
 gatgttcaag atacttcaac aaaagaaaga cttgaacaaa ttgcttcaaa agataaacct 780
 tcaacactat tagctgtcgc tggaccactt actgaaattt tctcggatat aatcgcaaac 840
 caaaatgatc gttatctcat tgggtgttgac accgaccaat cacttgttta tacaaaaact 900
 aaaaataaat ttttcacctc aattttgaaa aatttaggtt actccgtttt cagcggttct 960
 agtgatttat ataccaaaaa atcaaattca agaaatttag ccggctttga atttggtaaa 1020
 aaaagtgcga ccgtttatct tggaattaaa gacagggttg tcgatattgc tgatacttct 1080
 ttagaaggca atgataaaaa actcgcaact gaagccattt ctgaagctaa aaaagaattt 1140
 gaagaaaaaa ctaagacaat tcctgccgaa gaagtctgta aaactttaga aattccggaa 1200
 atgcctgata aacaacctga taagcaacag gaaagcttag acaaacttaa ttaccgatat 1260
 taa 1263

<210> 4
 <211> 423
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: mhp3

manipulated for in vitro expression

<400> 4

Met Trp Asp Lys Glu Thr Thr Lys Glu Glu Lys Ser Ala Asp Asn Gln
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Asn Lys Gln Ile Thr Asp Val Ser Lys Ile Ser Gly Leu Val Asn Glu
20 25 30

Arg Lys Ser Glu Ile Met Ala Ala Lys Ala Asp Ala Asn Lys His Phe
35 40 45

Gly Leu Asn Met Ala Ile Val Thr Ala Gly Gly Thr Val Asn Asp Asn
50 55 60

Ser Phe Asn Gln Ser Gly Trp Glu Ala Ile Gln Gln Leu Gly Ala Leu
65 70 75 80

Thr Gly Gly Glu Ile Thr Ser Val Asp Ser Ser Thr Ala Glu Leu Glu
85 90 95

Gly Lys Tyr Ser Ser Leu Ala Asn Thr Asn Lys Asn Val Trp Val Leu
100 105 110

Ser Gly Phe Gln His Gly Asp Ala Phe Thr Arg Trp Leu Lys Ile Pro
115 120 125

Glu Asn Lys Gln Leu Phe Thr Glu Lys Asn Ile Ile Ile Leu Gly Ile
130 135 140

Asp Trp Thr Asp Thr Glu Asn Val Ile Pro Thr Gly Arg Tyr Ile Asn
145 150 155 160

Leu Thr Tyr Lys Thr Glu Glu Ala Gly Trp Leu Ala Gly Tyr Ala Asn
165 170 175

Ala Ser Phe Leu Ala Lys Lys Phe Pro Ser Asp Pro Thr Lys Arg Ser
180 185 190

Ala Ile Val Ile Gly Gly Gly Ile Ser Pro Ala Val Thr Asp Phe Ile
195 200 205

Ala Gly Tyr Leu Ala Gly Ile Lys Ala Trp Asn Leu Lys Asn Ser Asp
210 215 220

Lys Lys Thr Lys Ile Thr Thr Asp Lys Ile Glu Ile Asn Leu Gly Phe
225 230 235 240

Asp Val Gln Asp Thr Ser Thr Lys Glu Arg Leu Glu Gln Ile Ala Ser
245 250 255

Lys Asp Lys Pro Ser Thr Leu Leu Ala Val Ala Gly Pro Leu Thr Glu
260 265 270

Ile Phe Ser Asp Ile Ile Ala Asn Gln Asn Asp Arg Tyr Leu Ile Gly
275 280 285

Val Asp Thr Asp Gln Ser Leu Val Tyr Thr Lys Thr Lys Asn Lys Phe
290 295 300

Phe Thr Ser Ile Leu Lys Asn Leu Gly Tyr Ser Val Phe Ser Val Leu
305 310 315 320

Ser Asp Leu Tyr Thr Lys Lys Ser Asn Ser Arg Asn Leu Ala Gly Phe
325 330 335

Glu Phe Gly Lys Lys Ser Ala Thr Val Tyr Leu Gly Ile Lys Asp Arg
340 345 350

Phe Val Asp Ile Ala Asp Thr Ser Leu Glu Gly Asn Asp Lys Lys Leu
355 360 365

Ala Thr Glu Ala Ile Ser Glu Ala Lys Lys Glu Phe Glu Glu Lys Thr
370 375 380

Lys Thr Ile Pro Ala Glu Glu Val Arg Lys Thr Leu Glu Ile Pro Glu
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Met Pro Asp Lys Gln Pro Asp Lys Gln Gln Glu Ser Leu Asp Lys Leu
405 410 415

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
420

<210> 5

<211> 602

<212> DNA

<213> Mycoplasma hyopneumoniae

<400> 5

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gagctatatt ttccttcaag ttcagcagtt gaactatcta ctgaagtaat ctcacctcca 180
gtaagagcgc caagttgttg aattgcctct caacttgatt ggttaaatga attatcattt 240
accgttcac cagcggttac aattgccata ttagcccaa aatgtttggt tgcacagct 300

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catccggcag agattgtcgc gattgctgaa agcggaaaaa ctaagcctaa gccaagaaat 480
ttatttcatt ttatcttttt tttcatagtt gttctcctaa ttaattgttt taattacgat 540
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<210> 6

<211> 200

<212> PRT

<213> Mycoplasma hyopneumoniae

<400> 6

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Asn His Leu Val Asn Ala Ser Pro Cys Trp Lys Pro Glu Ser Thr Gln
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Thr Phe Leu Leu Val Leu Ala Ser Glu Leu Tyr Phe Pro Ser Ser Ser
    35                        40                      45

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Ala Val Glu Leu Ser Thr Glu Val Ile Ser Pro Pro Val Arg Ala Pro
    50                        55                      60

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Ser Cys Trp Ile Ala Ser Gln Leu Asp Trp Leu Asn Glu Leu Ser Phe
   65                        70                      75                      80

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Thr Val Pro Pro Ala Val Thr Ile Ala Ile Phe Ser Pro Lys Cys Leu
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Phe Ala Ser Ala Phe Ala Ala Ile Ile Ser Asp Phe Arg Ser Leu Thr
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Ser Pro Glu Ile Phe Glu Thr Ser Val Ile Cys Leu Phe Trp Leu Ser
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Ala Asp Phe Ser Ser Leu Val Val Ser Leu Ser Gln His Pro Ala Glu
    130                        135                      140

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Ile Val Ala Ile Ala Glu Ser Gly Lys Thr Lys Pro Lys Pro Arg Asn
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Leu Phe His Phe Ile Phe Phe Phe Ile Val Val Leu Leu Ile Asn Cys
      165                        170                      175

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Phe Asn Tyr Asp Asp Phe Gln Leu Phe Phe Asn Lys Leu Ile Phe Ile

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180

185

190

Leu His Phe Leu Leu Tyr Ser Lys
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<210> 7

<211> 14

<212> PRT

<213> Mycoplasma hyopneumoniae

<400> 7

Ala Gly Xaa Trp Ala Lys Glu Thr Thr Lys Glu Glu Lys Ser
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<210> 8

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 8

Ala Trp Val Thr Ala Asp Gly Thr Val Asn
1 5 10

<210> 9

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

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Ala Ile Val Thr Ala Asp Gly Thr Val Asn Asp Asn Lys Pro Asn Gln
1 5 10 15

Trp Val Arg Lys Tyr
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<210> 10

<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 10
tgytgrgcna argaracnac naargargar 30

<210> 11
<211> 30
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<213> Artificial Sequence

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<400> 11
tgttgagcwa aagaaacwac waaagaagaa 30

<210> 12
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 12
tgrgtnacng cngayggnac ngtnaay 27

<210> 13
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 13

tgagtwacwg cwgatggwac wgtwaat

27

<210> 14

<211> 26

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:
Oligonucleotide

<400> 14

rttnacngtn ccrtcngcng tnacyc

26

<210> 15

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 15

attsacs gts ccats gcs g tsactc

26

<210> 16

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 16

tttgagacat cagtgatttg c

21

<210> 17

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 17
gaacgaaaat ccgaaattat gg

22

<210> 18
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 18
ctatctactg aagaatctca cc

22

<210> 19
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 19
gtgatgccgt tcacaagatg

20

<210> 20
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 20
cactaagaac gctgaaaacg g

21

<210> 21
<211> 21

<212> DNA
<213> Artificial Sequence

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Oligonucleotide

<400> 21
gattacaact gtaaaatcga g 21

<210> 22
<211> 20
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence:
Oligonucleotide

<400> 22
ggcttcttca gttttatagg 20

<210> 23
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 23
aaactcgcaa ctgaagcc 18

<210> 24
<211> 20
<212> DNA
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<223> Description of Artificial Sequence:
Oligonucleotide

<400> 24
gaaatgcctg ataaacaacc 20

<210> 25
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 25
cttcagaaat ggcttcagtt gc 22

<210> 26
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 26
gctagataac cagcgataaa atcag 25

<210> 27
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 27
tgcataatcc tgatttatac 19

<210> 28
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:

Oligonucleotide

<400> 28

tgaaagtcac cgtaattaaa ac

22

<210> 29

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 29

aatcggcata tgtgggataa agaaacaact aaag

34

<210> 30

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 30

ggagtaatct agattattaa tatcggtaat taag

34

<210> 31

<211> 23

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:
Oligonucleotide

<400> 31

gtttttgaat ataatagaaa atg

23

<210> 32

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 32

tttattaaaa aataattgaa agtcatcg

28

<210> 33

<211> 28

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:
Oligonucleotide

<400> 33

ctatatttgta attggcataa aaactgcc

28

<210> 34

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 34

gataaaatgg aataaatttc ttgg

24

<210> 35

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 35

caggttgga ggcaattcaa c

21

<210> 36

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 36

caaaaatggt tgggtacttt ctgg

24

<210> 37

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 37

cacaagatgg ttaaaaatcc c

21

<210> 38

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 38

ggaattgact ggactgatac tg

22

<210> 39

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 39

gccggatggc ttgcaggata tg

22

<210> 40

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide

<400> 40

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24

<210> 41

<211> 457

<212> PRT

<213> Mycoplasma hyorhinitis

<400> 41

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20 25 30

Gly Lys Ile Ile Arg Ile Phe Asp Asn Ser Phe Val Lys Asp Arg Gln
35 40 45

Ala Glu Ile Glu Lys Ala Lys Asn Phe Asp Phe Asn Thr Val Leu Leu
50 55 60

Thr Ala Gly Gly Thr Val Gln Asp Lys Ser Phe Asn Gln Ser Ile Trp
65 70 75 80

Glu Ala Val Leu Glu His Tyr Asp Gln Ile Glu Lys Thr Thr Asn Leu
85 90 95

Asp Arg Val Ser Gln Glu Thr Asn Asn Gln Ser Glu Leu Ile Gly Lys
100 105 110

Tyr Lys Asn Phe Leu Asn Gly Asn Lys Asn Val Trp Ile Leu Thr Gly
115 120 125

Phe	Gln	Gln	Gly	Gln	Glu	Phe	Pro	Lys	Phe	Leu	Lys	Gln	Thr	Asp	Ser	
130						135					140					
Asn	Gly	Lys	Lys	Tyr	Ser	Asp	Leu	Leu	Ala	Glu	Lys	Lys	Val	Ile	Ile	
145					150					155					160	
Val	Ala	Val	Asp	Trp	Asp	Leu	Ser	Lys	Glu	Asp	Lys	Asp	Leu	Ile	Lys	
			165						170					175		
Ala	Gly	His	Phe	Ile	Ser	Leu	Leu	Tyr	Lys	Thr	Glu	Glu	Ala	Gly	Phe	
		180						185					190			
Ile	Ala	Gly	Tyr	Ala	Ser	Ser	Lys	Phe	Leu	Ala	Tyr	Lys	Phe	Pro	Asn	
	195						200					205				
Asp	Glu	Ala	Lys	Arg	Thr	Ile	Ala	Pro	Phe	Gly	Gly	Gly	His	Gly	Ala	
210						215					220					
Gly	Val	Thr	Asp	Phe	Ile	Ala	Gly	Phe	Leu	Ala	Gly	Ile	Ala	Lys	Tyr	
225					230					235					240	
Asn	Asn	Asp	Asn	Pro	Thr	Ala	Lys	Val	Thr	Ile	Ser	Asp	Asn	Asn	Ile	
			245						250					255		
Asn	Ile	Asp	Thr	Gly	Phe	Ile	Ser	Asn	Asp	Lys	Thr	Ala	Thr	Phe	Ile	
		260						265					270			
Asn	Gly	Ile	Val	Asn	Lys	Ser	Ser	Leu	Val	Leu	Pro	Val	Ala	Gly	Ser	
	275						280					285				
Leu	Thr	Ser	Ser	Val	Val	Asp	Ala	Ile	Lys	Lys	Ser	Asn	Lys	Asp	Thr	
290						295					300					
Lys	Tyr	Leu	Ile	Gly	Val	Asp	Thr	Asp	Gln	Ser	Lys	Ile	Phe	Ser	Pro	
305					310					315					320	
Ala	Thr	Val	Phe	Phe	Thr	Ser	Ile	Glu	Lys	His	Leu	Gly	Arg	Thr	Ile	
			325						330					335		
Tyr	Gln	Val	Leu	Thr	Asp	Ile	Trp	Leu	Lys	Lys	Glu	Asp	Ser	Lys	Phe	
		340						345					350			
Leu	Gly	Ser	Phe	Arg	Ser	Phe	Lys	Leu	Thr	Asn	Pro	Ala	Asn	Ala	Thr	
	355						360					365				
Val	Tyr	Lys	Gly	Ile	Ser	Asp	Asp	Phe	Val	Gly	Val	Ser	Asn	Ser	Thr	
370						375					380					

Val Ala Asp Ala Asp Lys Val Lys Ala Gln Glu Phe Leu Asn Glu Ala
385 390 395 400

Thr Ala Asp Phe Lys Lys Gln Ile Gln Ala Asn Pro Thr Asn Tyr Lys
405 410 415

Ser Val Leu Gly Ile Pro Thr Met Leu Ile Asn Asp Asn Asp Ala Lys
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Asp Asn Glu Lys Ala Ser Leu Phe His Phe Asp Asn Trp Gln Thr Tyr
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Trp Ala Phe His Ser Arg Phe Ile Asn
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Trp Asp Lys Glu

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